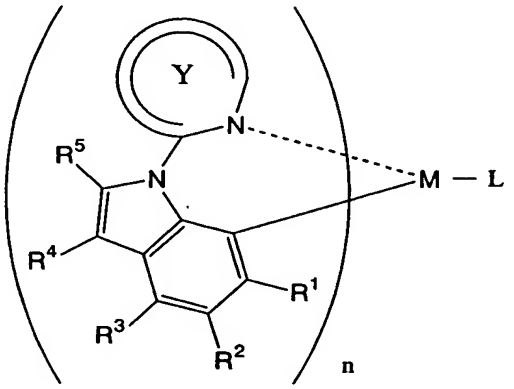
What is claimed is:

1. An organometallic complex represented by general formula 1,



(1)

wherein each of R^1 to R^5 is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group, an amino group, a dialkylamino group, a diarylamino group, a vinyl group, an aryl group, and a heterocyclic group,

wherein Y is a heterocyclic group containing a nitrogen atom as a hetero atom,

wherein M is at least one of atoms of group 9 and group 10 in the periodic table,

wherein when the M is the atom of group 9 in the periodic table, n=2,

wherein when the M is the atom of group 10 in the periodic table, n=1, and

wherein L is selected from the group consisting of a monoanionic bidentate chelate ligand having a beta diketone structure, a monoanionic bidentate chelate ligand having a carboxyl group and a monoanionic bidentate chelate ligand having a phenol hydroxyl group.

2. An organometallic complex according to claim 1, wherein each pair of R1 and R2, R2 and R3, and R4 and R5 is bonded each other to form aromatic rings.

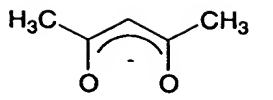
3. An organometallic complex according to claim 1, wherein the Y is a heterocyclic group containing at least one of a five-membered ring and a six-membered ring.

4. An organometallic complex according to claim 1, wherein the M is at least one of an iridium atom and a platinum atom.

5. A phosphorescent material comprising the organometallic complex according to claim 1.

6. A light-emitting element having a layer comprising the organometallic complex according to claim 1 between a pair of electrodes.

7. An organometallic complex according to claim 1, wherein the L is represented by at least one of structural formulae 5 to 11.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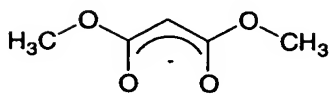
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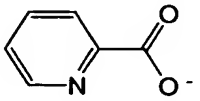
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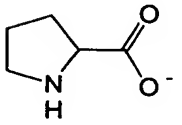
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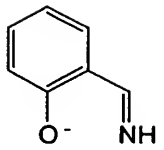
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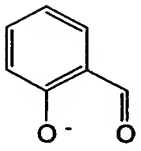
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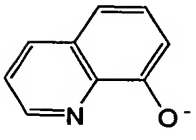
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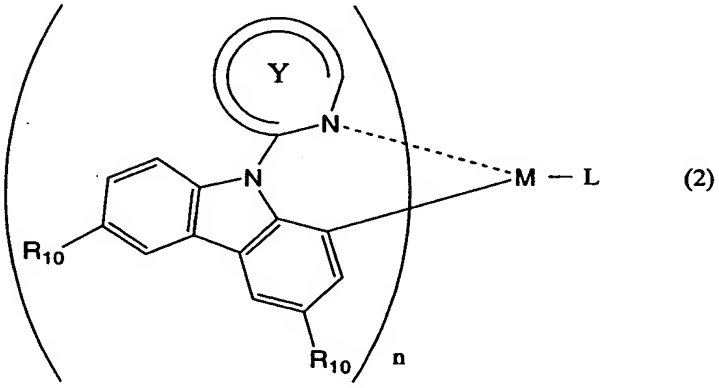
8. An organometallic complex represented by general formula 2,


(2)

wherein R^{10} is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group, an amino group, a dialkylamino group, a diarylamino group, a vinyl group, an aryl group, and a heterocyclic group,

wherein Y is a heterocyclic group containing a nitrogen atom as a hetero atom,

wherein M is at least one of atoms of group 9 and group 10 in the periodic table,

wherein when the M is the atoms of group 9 in the periodic table, n=2,

wherein when the M is the atom of group 10 in the periodic table, n=1, and

wherein L is selected from the group consisting of a monoanionic bidentate chelate ligand having a beta diketone structure, a monoanionic bidentate chelate ligand having a carboxyl group, and a monoanionic bidentate chelate ligand having a phenol hydroxyl group.

9. An organometallic complex according to claim 8, wherein the Y is a heterocyclic group containing at least one of a five-membered ring and a six-membered ring.

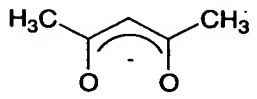
10. An organometallic complex according to claim 8, wherein the M is at least one of an iridium atom and a platinum atom.

11. A phosphorescent material comprising the organometallic complex according to claim 8.

12. A light-emitting element having a layer comprising the organometallic complex according to claim 8 between a pair of electrodes.

13. An organometallic complex according to claim 8, wherein the L is

represented by at least one of structural formulae 5 to 11.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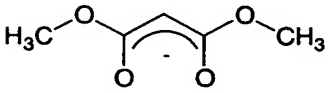
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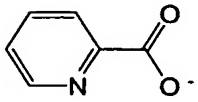
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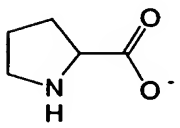
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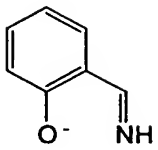
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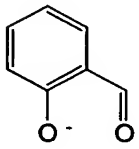
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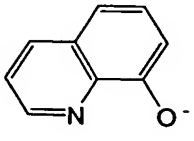
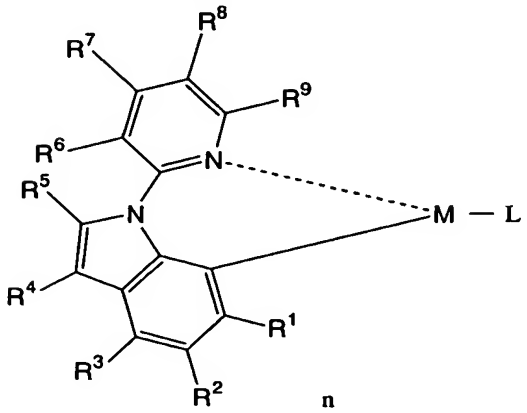

(11)

14. An organometallic complex represented by general formula 3,


(3)

wherein each of R^1 to R^9 is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group, an amino group, a dialkylamino group, a diarylamino group, a

vinyl group, an aryl group, and a heterocyclic group,

wherein M is at least one of atoms of group 9 and group 10 in the periodic table,

wherein when the M is the atom of group 9 in the periodic table, n=2,

wherein when the M is the atom of group 10 in the periodic table, n=1, and

wherein L is selected from the group consisting of a monoanionic bidentate chelate ligand having a beta diketone structure, a monoanionic bidentate chelate ligand having a carboxyl group, and a monoanionic bidentate chelate ligand having a phenol hydroxyl group.

15. An organometallic complex according to claim 14, wherein each pair of R1 and R2, R2 and R3, and R4 and R5 is bonded each other to form aromatic rings.

16. An organometallic complex according to claim 14, wherein the Y is a heterocyclic group containing at least one of a five-membered ring and a six-membered ring.

17. An organometallic complex according to claim 14, wherein the M is at least one of an iridium atom and a platinum atom.

18. A phosphorescent material comprising the organometallic complex according to claim 14.

19. A light-emitting element having a layer comprising the organometallic

complex according to claim 14 between a pair of electrodes.

20. An organometallic complex according to claim 14, wherein the L is represented by at least one of structural formulae 5 to 11.

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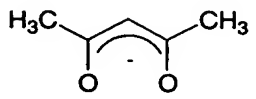

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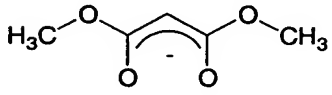

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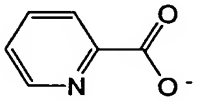

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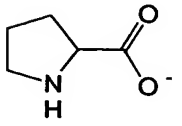

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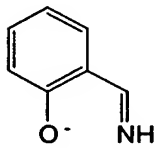

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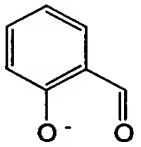

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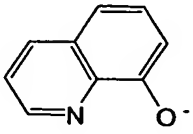
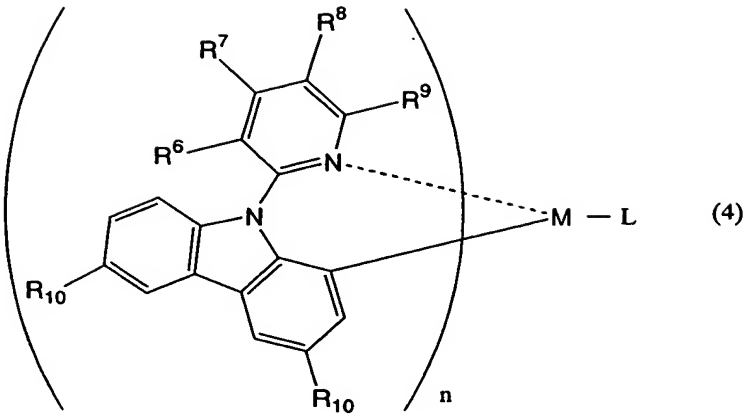


(11)

21. An organometallic complexes represented by general formula 4,



(4)

wherein each of R^6 to R^{10} is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group, an amino group, a dialkylamino group, a diarylamino group, a vinyl group, an aryl group, and a heterocyclic group,

wherein M is at least one of atoms of group 9 and group 10 in the periodic table,

wherein when the M is the atom of group 9 in the periodic table, n=2,

wherein when the M is the atom of group 10 in the periodic table, n=1, and

wherein L is selected from the group consisting of a monoanionic bidentate chelate ligand having a beta diketone structure, a monoanionic bidentate chelate ligand having a carboxyl group, and a monoanionic bidentate chelate ligand having a phenol hydroxyl group.

22. An organometallic complex according to claim 21, wherein each pair of R6 and R7, R7 and R8, and R8 and R9 is bonded each other to form aromatic rings.

23. An organometallic complex according to claim 21, wherein the Y is a

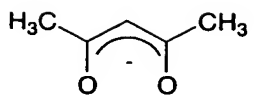
heterocyclic group containing at least one of a five-membered ring and a six-membered ring.

24. An organometallic complex according to claim 21, wherein the M is at least one of an iridium atom and a platinum atom.

25. A phosphorescent material comprising the organometallic complex according to claim 21.

26. A light-emitting element having a layer comprising the organometallic complex according to claim 21 between a pair of electrodes.

27. An organometallic complex according to claim 21, wherein the L is represented by at least one of structural formulae 5 to 11.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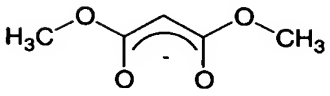
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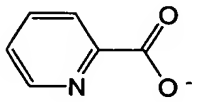
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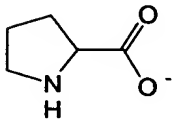
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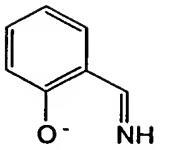
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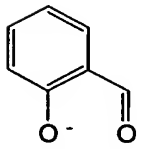
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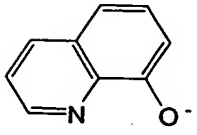
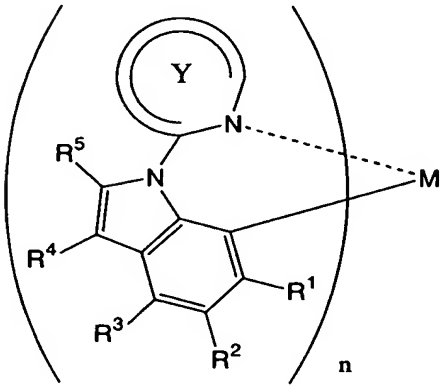

(11)

28. An organometallic complex represented by general formula 24,


(24)

wherein each of R^1 to R^5 is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group, an amino group, a dialkylamino group, a diarylamino group, a vinyl group, an aryl group, and a heterocyclic group,

wherein Y is a heterocyclic group containing a nitrogen atom as a hetero atom,

wherein M is at least one of atoms of group 9 and group 10 in the periodic table,

wherein when the M is the atom of group 9 in the periodic table, n=2, and

wherein when the M is the atom of group 10 in the periodic table, n=1.

29. An organometallic complex according to claim 28, wherein each pair of R1 and R2, R2 and R3, and R4 and R5 is bonded each other to form aromatic rings.

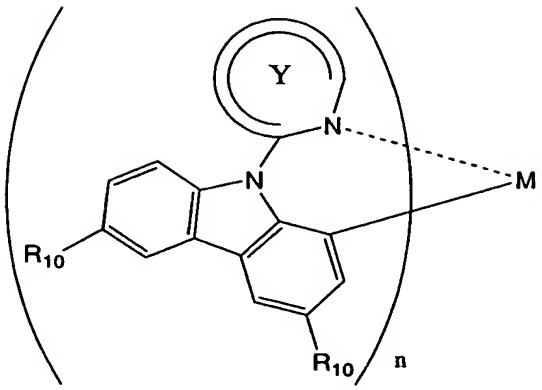
30. An organometallic complex according to claim 28, wherein the Y is a heterocyclic group containing at least one of a five-membered ring and a six-membered ring.

31. An organometallic complex according to claim 31, wherein the M is at least one of an iridium atom or a platinum atom.

32. A phosphorescent material comprising the organometallic complex according to claim 28.

33. A light-emitting element having a layer comprising the organometallic complex according to claim 28 between a pair of electrodes.

34. An organometallic complex represented by general formula 25,



(25)

wherein R^{10} is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group, an amino group, a dialkylamino group, a diarylamino group, a vinyl group, an aryl group, and a heterocyclic group,

wherein Y is a heterocyclic group containing a nitrogen atom as a hetero atom,

wherein M is at least one of atoms of group 9 and group 10 in the periodic table,

wherein when the M is atom of group 9 in the periodic table, n=2, and

wherein when the M is atom of group 10 in the periodic table, n=1.

35. An organometallic complex according to claim 34, wherein the Y is a heterocyclic group containing at least one of a five-membered ring and a six-membered ring.

36. An organometallic complex according to claim 34, wherein the M is at least one of an iridium atom and a platinum atom.

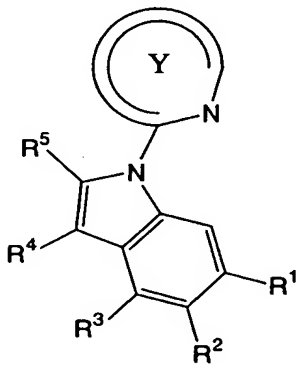
37. A phosphorescent material comprising the organometallic complex

according to claim 34.

38. A light-emitting element having a layer comprising the organometallic complex according to claim 34 between a pair of electrodes.

39. A method for forming an organometallic complex comprising the step of:

forming a coordinate bond between a metal and a compound which is represented by general formula 12,



(12)

wherein each of R^1 to R^5 is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group, an amino group, a dialkylamino group, a diarylamino group, a vinyl group, an aryl group, and a heterocyclic group, and

wherein Y is a heterocyclic group containing a nitrogen atom as a hetero atom.

40. A method according to claim 39, wherein each pair of R^1 and R^2, R^2 and R^3, and R^4 and R^5 is bonded each other to form aromatic rings.